Format No: CP/TF/01

## TEST REPORT OF PHYSICAL PROPERTIES OF CEMENT - 53 Grade

| | | |
|---|---|---|
| **Lab ID** | : | **CP-2019-10-24-40** **Date: 20-09-2019** |
| **Customer** | : | Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore. |
| **Address** | : | Kodigehalli Sub Division, BBMP, Bangalore. |
| **Project Name** | : | Drilling of Borewells and Providing Pipeline to Borewells in Ward no. 07 Byatarayanapura Kodigehalli Sub Division. |
| **Agency** | : | Sri.T.Nataraj, #02, 1st Main, Amara Jyothi Layout, Cholanagara, R T Nagara(P), Bangalore-560 032. |
| **Customer's Reference** | : | BBMP/EE/BTP/WO/000089/2019-20 |
| **Source of Sample** | : | Sample supplied by Agency |
| **Sample Condition** | : | Satisfactory |
| **Date of Receipt** | : | 17-09-2019 |
| **Sample Type** | : | Birla Super 53grade |
| **Reference to BIS codes** | : | IS 12269 : 2013, 53 Grade Ordinary Portland cement Specification ,<br>IS 4031 (Part 1,2 3,4,5, 6,11):1988<br>IS 4031 Part 1 DETERMINATION OF FINENESS BY DRY SIEVING, Clause 4.4<br>IS 4031 Part 2, Determination of Fineness by Blaine Air Permeability Method, Clause 5<br>IS 4031 Part 3, Determination of Soundness, Clause 5,Clause 6<br>IS 4031 Part 4, Determination of Consistency of Standard Cement Paste, Clause 5<br>IS 4031 Part 5, Determination of Initial & Final Setting Time, Clause 5<br>IS 4031 Part 11,DETERMINATION OF DENSITY , Clause 6 |
| **Date of test** | : | 18-09-2019 |
| **Environmental Conditions during test** | : | Temperature: 26°C<br>Humidity: 72% |

| Sl.No. | Physical properties | Results | Requirement as per IS 12269: 2013 |
|---|---|---|---|
| 1 | Fineness by dry sieving (%) | 1.76 | – |
| 2 | Finess by Air permeablity method ($m^2$/kg,Min) | 292.1 | 225$m^2$/kg, Min |
| 3 | Density (gm/cc) | 3.12 | – |
| 4 | Standard Consistency (%) | 28.0% | Not specified |
| 5 | Initial Setting time | 155 minutes | Not less than 30 minutes |
| 6 | Final Setting time | 270 minutes | Not more than 600 minutes |
| 7 | Soundness (Le Chatelier's Method) | 1mm | Not more than 10 mm |

**Note:**

The results pertain to the samples received and tested.

All information furnished by Customer/Representative

Any correction in the report will make this report invalid

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Samples will be disposed after 90 days from the date of issue of test certificate

**FOR CIVIL Pro.**

**R KARTHIK RECHAN**
Authorized Signatory
**Quality Manager**

CIVIL PRO BANGALORE Sig. Date

AE(Ltd)

Assistant Executive Engineer
Kodigehalli Sub Division
Yelahanka Zone, B.B.M.P
Bangalore.


****End of Report****

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## TEST REPORT OF PHYSICAL PROPERTIES OF CEMENT - 53 Grade

| | | |
|---|---|---|
| **Lab ID** | : | **CP-2019-10-24-40** **Date: 16-10-2019** |
| **Customer** | : | Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore. |
| **Address** | : | Kodigehalli Sub Division, BBMP, Bangalore. |
| **Project Name** | : | Drilling of Borewells and Providing Pipeline to Borewells in Ward no. 07 Byatarayanapura Kodigehalli Sub Division. |
| **Agency** | : | Sri.T.Nataraj, #02, 1st Main, Amara Jyothi Layout, Cholanagara, R T Nagara(P), Bangalore-560 032. |
| **Customer's Reference** | : | BBMP/EE/BTP/WO/000089/2019-20 |
| **Source of Sample** | : | Sample supplied by Agency |
| **Sample Condition** | : | Satisfactory |
| **Date of Receipt** | : | 17-09-2019 |
| **Sample Type** | : | Birla Super 53grade |
| **Reference to BIS codes** | : | IS 12269 : 2013, 53 Grade Ordinary Portland cement Specification ,<br>IS 4031 Part 4, Determination of Consistency of Standard Cement Paste, Clause 5<br>IS 4031 Part 6, Determination of Compressive Strength, Clause 6 |
| **Date of test** | : | 18-09-2019 |
| **Environmental Conditions during test** | : | Temperature: 26˚C<br>Humidity: 72% |

**Compressive Strength**

| Sl.No. | Physical properties | Results | Requirement as per IS 12269: 2013 |
|---|---|---|---|
| 1 | 3 Days | 28.5N/mm$^2$ | Not less than 27 N/mm$^2$ |
| 2 | 7 Days | 39.0N/mm$^2$ | Not less than 37 N/mm$^2$ |
| 3 | 28 Days | 58.5N/mm$^2$ | Not less than 53 N/mm$^2$ |

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**R KARTHIK RECHAN**
Authorized Signatory
**Quality Manager**

Assistant Executive Engineer
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Yelahanka, B.B.M.P.
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CIVIL Pro Sig. Date. BANGALORE


****End of Report****

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HIGHWAY & BUILDING MATERIALS TESTING LABORATORY | STRUCTURAL |
GEO TECHNICAL | PROJECT MANAGEMENT | SURVEYING SERVICES |

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## TEST REPORT ON COARSE AGGREGATES

| | | |
|---|---|---|
| **Lab ID** | : | **CP-2019-10-24-40** **Date: 20-09-2019** |
| **Customer** | : | Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore. |
| **Address** | : | Kodigehalli Sub Division, BBMP, Bangalore. |
| **Project Name** | : | Drilling of Borewells and Providing Pipeline to Borewells in Ward no. 07 Byatarayanapura Kodigehalli Sub Division. |
| **Agency** | : | Sri.T.Nataraj, #02, 1st Main, Amara Jyothi Layout, Cholanagara, R T Nagara(P), Bangalore-560 032. |
| **Customer's Reference** | : | BBMP/EE/BTP/WO/000089/2019-20 |
| **Source of Sample** | : | Sample supplied by Agency |
| **Sample condition** | : | Satisfactory |
| **Date of Receipt** | : | 17-09-2019 |
| **Sample Type** | : | 40mm down size coarse aggregate |
| **Reference to BIS codes** | : | IS: 383:2016 (Specification for Coarse and fine Aggregates )<br>IS: 2386 :1963(Part - 1,3,4) RA2011<br>IS 2386 Part 1: Particle Size and Shape<br>IS 2386 Part 3: Specific gravity, Density, Voids,Water Absorption<br>IS 2386 Part 4: Mechanical Properties |
| **Date of test** | : | 17-09-2019 |

**SIEVE ANALYSIS (PARTICLE SIZE DISTRIBUTION) OF 40MM DOWN COARSE AGGREGATE:**

**Total weight taken : 15000 grams**

| Sample No. | Sieve No. | Weight Retained in gms | Cumulative Weight Retained in gms | % Cumulative Weight Retained | % Passing | Required as per IS 383:2016 |
|---|---|---|---|---|---|---|
| 1 | 80 mm | 0 | 0 | 0.0 | 100 | 100 |
| 2 | 40 mm | 245 | 245 | 1.6 | 98.4 | 90-100 |
| 3 | 20 mm | 7875 | 8120 | 54.1 | 45.9 | 30-70 |
| 4 | 10 mm | 3899 | 12019 | 80.1 | 19.9 | 10-35 |
| 5 | 4.75 mm | 2588 | 14607 | 97.4 | 2.6 | 0-5 |
| 6 | Pan | 393 | 15000 | 100.0 | 0 | --- |



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## TEST REPORT ON COARSE AGGREGATES

**Lab ID** : **CP-2019-10-24-40** **Date: 20-09-2019**

**PHYSICAL PROPERTIES**

| Sl.no | Tests | Result | Requirements as per IS:383-2016 |
|---|---|---|---|
| 1 | Flakiness Index(%) | 12.4 | Combined Flakiness & Elongation Index Shall not Exceed 40% for Uncrushed & Crushed Aggregate |
| 2 | Elongation Index(%) | 11.9 | |
| 3 | Specific Gravity | 2.64 | _ |
| 4 | Bulk Density(Loose) (Kg/l) | 1.38 | _ |
| 5 | Bulk Density(Compacted) (Kg/l) | 1.45 | _ |
| 6 | Water Absorption(%) | 0.22 | _ |

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**R KARTHIK RECHAN**
Authorized Signatory
**Quality Manager**

Assistant Executive Engineer
Kodigehalli Sub Division,
Yelahanka Zone, B.B.M.P.
Bangalore

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Format No: CP/TF/01

## TEST REPORT ON COARSE AGGREGATES

| | | |
|---|---|---|
| **Lab ID** | : | **CP-2019-10-24-40** **Date: 19-09-2019** |
| **Customer** | : | Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore. |
| **Address** | : | Kodigehalli Sub Division, BBMP, Bangalore. |
| **Project Name** | : | Drilling of Borewells and Providing Pipeline to Borewells in Ward no. 07 Byatarayanapura Kodigehalli Sub Division. |
| **Agency** | : | Sri.T.Nataraj, #02, 1st Main, Amara Jyothi Layout, Cholanagara, R T Nagara(P), Bangalore-560 032. |
| **Customer Reference** | : | BBMP/EE/BTP/WO/000089/2019-20 |
| **Source of Sample** | : | Sample supplied by Agency |
| **Sample Condition** | : | Satisfactory |
| **Date of Receipt** | : | 17-09-2019 |
| **Sample Type/ Size** | : | 20mm down size coarse aggregate |
| **Reference to BIS codes** | : | IS: 383:2016 (Specification for Coarse and fine Aggregates )<br>IS: 2386 :1963(Part - 1,3,4) RA2011<br>IS 2386 Part 1: Particle Size and Shape<br>IS 2386 Part 3: Specific gravity, Density, Voids,Water Absorption<br>IS 2386 Part 4: Mechanical Properties |
| **Date of test** | : | 17-09-2019 |

**SIEVE ANALYSIS (PARTICLE SIZE DISTRIBUTION) OF 20MM DOWN COARSE AGGREGATE:**

**Total weight taken : 5000 grams**

| Sample No. | Sieve No. | Weight Retained in gms | Cumulative Weight Retained in gms | % Cumulative Weight Retained | % Passing | Required as per IS 383:2016 |
|---|---|---|---|---|---|---|
| 1 | 40 mm | 0 | 0 | 0 | 100 | 100 |
| 2 | 20 mm | 298 | 298 | 6.0 | 94.0 | 90-100 |
| 3 | 10 mm | 2645 | 2943 | 58.9 | 41.1 | 25-55 |
| 4 | 4.75 mm | 1811 | 4754 | 95.1 | 4.9 | 0-10 |
| 5 | Pan | 246 | 5000 | 100 | 0 | – |



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## TEST REPORT ON COARSE AGGREGATES

**Lab ID** : **CP-2019-10-24-40** **Date: 19-09-2019**

**PHYSICAL PROPERTIES**

| Sl.no | Tests | Result | Requirements as per IS:383-2016 |
|---|---|---|---|
| 1 | Flakiness Index(%) | 8.9 | Combined Flakiness & Elongation Index Shall not Exceed 40% for Uncrushed & Crushed Aggregate |
| 2 | Elongation Index(%) | 11.4 | |
| 3 | Specific Gravity | 2.62 | _ |
| 4 | Bulk Density(Loose) (Kg/l) | 1.42 | _ |
| 5 | Bulk Density(Compacted) (Kg/l) | 1.48 | _ |
| 6 | Water Absorption(%) | 0.35 | _ |
| 7 | Aggregate crushing Value(%) | 24.8 | Max 30% for Aggregates to be used in concrete for wearing Surface, In case Aggregate Crushing Value Exceeds 30% then the test for ten percent fines should be conducted for Aggregates to be used in concrete other than for wearing Surface. |
| 8 | Aggregate Impact Value(%) | 25.1 | 30% for Aggregates to be used in concrete for wearing Surface,<br>45% for Aggregates to be used in concrete other than for wearing Surface. |

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**FOR CIVIL Pro.**

**R KARTHIK RECHAN**
Authorized Signature
**Quality Manager**

Assistant Executive Engineer
Kodigehalli Sub Division,
Yelahanka Zone, B.B.M.P
Bangalore

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*End of Report*

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Format No: CP/TF/01

# TEST REPORT OF FINE AGGREGATE

**Lab ID** : **CP-2019-10-24-40** **Date: 19-09-2019**

**Customer** : Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.

**Address** : Kodigehalli Sub Division, BBMP, Bangalore.

**Project Name** : Drilling of Borewells and Providing Pipeline to Borewells in Ward no. 07 Byatarayanapura Kodigehalli Sub Division.

**Agency** : Sri.T.Nataraj, #02, 1st Main, Amara Jyothi Layout, Cholanagara, R T Nagara(P), Bangalore-560 032.

**Customer's Reference** : BBMP/EE/BTP/WO/000089/2019-20

**Source of Sample** : Sample supplied by Agency

**Sample Condition** : Satisfactory

**Date of Receipt** : 17-09-2019

**Sample Type** : Fine Aggregate

**Reference to BIS codes** : IS 383 : 2016 (Specification for Coarse and fine Aggregates)
IS: 2386 :1963(Part - 1, 3) RA2012
IS 2386 Part 1: Particle Size and Shape
IS 2386 Part 3: Specific gravity, Density, Voids,Water Absorption

**Date of test** : 17-09-2019

**Total weight taken** : 1000 grams

| Sl.no | Sieve Size | Weight Retained (gms) | Cumulative Weight Retained (gms) | % Cumulative Weight Retained | % Passing | Requirement as per IS 383:2016 | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Grading Zone I | Grading Zone II | Grading Zone III | Grading Zone IV |
| 1 | 10 mm | 0 | 0 | 0.0 | 100.0 | 100 | 100 | 100 | 100 |
| 2 | 4.75 mm | 27 | 27 | 2.7 | 97.3 | 90-100 | 90-100 | 90-100 | 95-100 |
| 3 | 2.36 mm | 55 | 82 | 8.2 | 91.8 | 60-95 | 75-100 | 85-100 | 95-100 |
| 4 | 1.18 mm | 239 | 321 | 32.1 | 67.9 | 30-70 | 55-90 | 75-100 | 90-100 |
| 5 | 600 micron | 205 | 526 | 52.6 | 47.4 | 15-34 | 35-59 | 60-79 | 80-100 |
| 6 | 300 micron | 203 | 729 | 72.9 | 27.1 | 5-20 | 8-30 | 12-40 | 15-50 |
| 7 | 150 micron | 191 | 920 | 92.0 | 8.0 | 0-10 | 0-10 | 0-10 | 0-15 |
| 8 | Pan | 80 | 1000 | 100.0 | 0.0 | --- | --- | --- | --- |

**Result :The tested Sample Conforms to Grading Zone II**



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# TEST REPORT OF FINE AGGREGATE

**Lab ID** : **CP-2019-10-24-40** **Date: 19-09-2019**

**PHYSICAL PROPERTIES**

| Sl.no | Tests | Result | Requirements as per IS 383:2016 |
|---|---|---|---|
| 1 | Water Absorption(%) | 1.5 | – |
| 2 | Specific Gravity | 2.59 | – |
| 3 | Material finer than 75 micron(%) | 6.9 | Uncrushed fine Aggregate Max 3%, Crushed Fine aggregate Max 15%, Mixed Fine aggregate Max 12%, Manufactured Fine aggregate Max 10% |

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**FOR CIVIL Pro.**

**R KARTHIK RECHAN**
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**Quality Manager**

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Yelahanka Zone, B.B.M.P.
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CIVIL Pro Sig..... Date..... BANGALORE


****End of Report****

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